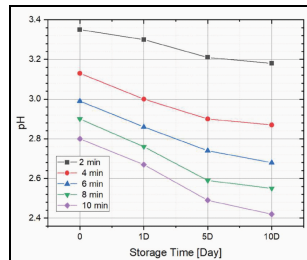


Approximate Analytical Method of Streamer Discharge: Solutions

by Qizheng Ye

[Read More](#)



High-Efficiency Mass Production of Plasma Activated Water by the Gliding Arc Plasma

by Yun-Sik Jin, Chuhyun Cho, Chae-Hwa Shon, Daejong Kim, Keekon Kang, and Sung-Roc Jang

[Read More](#)



IEEE TRANSACTIONS ON
**PLASMA
SCIENCE**
A PUBLICATION OF THE IEEE NUCLEAR AND PLASMA SCIENCES SOCIETY
JANUARY 2025 VOLUME 53 NUMBER 1 ITPSBD (ISSN 0093-3813)

CONTENTS

Editorial	E. Schepelnyk	3
Basic Plasma in Bulk and Parallel-Beam Plasmas		
Modeling of Laser-Generated Ion Acoustic Shock in Negative Ion Plasma	F. Pothel and H. Rabany	7
Magnetic Field-Induced Ion Trapping Around One Ion in Plasma	M. R. Barilina, S. K. Kulkarni, and T. S. Ranganath	12
Analytical Solution for Plasma Ion Trapping in the Ionosphere	M. R. Barilina and E. Schepelnyk	20
Industrial, Commercial, and Biological (Non-Medical) Applications of Plasma		
High-Efficiency Mass Production of Plasma-Activated Water by the Gliding Arc Plasma	Y. S. Jin, C. Cho, C.-H. Shon, D. Kim, K. Kang, and S.-R. Jang	34
Thermal Effect of Low-Pressure Glow Discharge and Its Role in Plasma Treatment of Polyethylene	S. Liu, F. Fu, G. Hong, Z. Zhang, Q. He, A. Hu, Z. Shen, L. Zhang, F. Liu, Y. Wang, J. Jiang, and Y. Li	40
Enhancing Operational Reliability of Plasma-Activated Water Treatment on Heavy Organic Feed Fraction—High-Throughput, Automation, and Data-Driven Operations	M. Barilina, F. C. Poole, J. J. Auld, J. Sakon, K. Subramanian, V. Srinivas, F. Sotgiu, R. C. Proffers, and M. D'Onofrio	51
Plasma Diagnostics		
Analysis of the Electron Distribution Function Inside of a LdB ₁ Helicon Cathode	R. J. Barlow, J. D. Rogers, and E. D. Brunner	63
Plasma Process Science and Technology		
Discharge Characteristics and Launch Experiment of Multipolar Air-Coupled Plasma	W. Li, F. Chen, F. Wang, B. Fu, P. Shi, and F. Jia	71

Contents Continued on Page 81



IEEE Transactions on Plasma Science

A publication of the IEEE Nuclear and Plasma Sciences Society.

[VIEW THE TABLE OF CONTENTS](#)

[T-PS Home](#) [T-PS in IEEE Xplore](#) [Early Access](#) [Manuscript Submission](#)

[View the full series on IEEE Xplore.](#)